



# Dry Facts

...from Arctic India Sales

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## *A Rewarding Year*

The year opened with the good news about Bry-Air having been selected for a special recognition award under the National Awards for outstanding small scale entrepreneurs 1987. We are justifiably proud of the achievement, which comes within four years of the company's inception. We are here today because of the dedicated and able contribution of each one of our people and continued support of our customers. Together we are a strong family and herein lies the key to our growth and success even for the coming years.

This spurs us to become rededicated to our final objective—to serve our customers better-with better service and better quality products; the pillars on which rests—a successful organization.

**Bry-Air**

**Forever on the Move**

Dedicated efforts in the last five years have paid off. Bry-Air has become synonymous with dehumidification in India. Our heat recovery programme is contributing significantly to the energy conservation drive in the industry. Plastics drying equipment is keeping the moulding of engineering plastics abreast with international quality.

Delair products in compressed air drying and for telecommunication industry have been launched and are making inroads into the market, based on quality and superior performance. The company has still a long way to go keeping in mind the constant upgradation in quality and customer service. Bry-Air marches ahead by opening new territories and introducing new products. A brief insight into the current years activities are:

### **Bry-Air to Open an Office in Malaysia**

Bry-Air presence in Malaysia will help support sales and service in the ASEAN region more effectively. Growing business in the region warrants quicker support for the customer for application engineering support. Bry-Air products out of India have been well accepted and are performing well in Malaysia, Thailand and Phillipines.

### **Additions in the Range of Plastics Drying Machinery**

Plastics Dryers are catching on in the Indian market, Bry-Air will introduce this year a new range of dryers for the small moulders at affordable prices.

### **Additions to the Heat Recovery Range**

Bry-Air's air to air heat recovery systems, based on heat pipe concept, recover heat from oven and dryer exhausts upto 85%. Additionally heat exchangers based on the rotary wheel concept will shortly be introduced.

Bry-Air is continuously trying to open new application areas in drying and field of dehumidification, up-grading the equipment and applying methods most current in the World. Look out for new introductions and information in our forthcoming issues of Dry-Facts.



# 'No More Sweat'!!!

## With Mould Dehumidification Systems

'Mould Sweating' is a familiar problem to all injection and blow moulders. This is nothing but condensation of water due to sudden changes in temperature. The hot moulds have to be chilled before the moulded parts can be released. If the surface temperature falls below the dewpoint of the surrounding air, condensation will occur. This problem always arises when short cooling times are to be achieved the low cooling water inlet temperature. Condensation on moulds leads to corrosion on the mould and surface blemishes and thus to increased rejects.

The Bry-Air mould dehumidification systems are being used worldwide to control this problem; by lowering the surrounding air dewpoint to a level, 5 to 10 degrees lower than the chilled water temperature in the moulds. By maintaining this consistently low dewpoint, mould sweating is eliminated thus resulting in decreased rusting and corrosion of the equipment.



The picture shows a small mould dehumidification system prior to despatch. This system is mounted close to the injection moulding machine and supplies dry air through a hood or shroud to continuously flush the mould area with dry air.

## R<sub>x</sub> for Eno's

For relieving  
stressful packaging  
use Bry-Air  
Dehumidifiers



Anyone familiar with the digestive properties of Eno's fruit salt is also familiar of its reaction with water. The moment it comes in contact with water, effervescence takes place with escaping carbon dioxide forming bubbles.

Hence if effervescent powders are packed in the presence of high humidity, moisture reacts with powder making it stick to the packaging machine. Deterioration also takes place due to carbon-dioxide and water formed.

HMM Rajamundry are controlling the humidity in the Eno's packing area (at  $40 \pm 5\%$  RH at  $72 \pm 2^\circ\text{F}$ ) with a Bry-Air MVB dehumidifier.

HMM is also using Bry-Air equipment elsewhere for maintaining desired conditions in Horlicks and Boots packaging area.

## 'Dry Air for Rocketfuel'

The space age of today has focussed attention on high technology products with greater emphasis on quality and critical performance. Development of efficient, dependable and versatile dehumidification systems has frequently been the success of a new technology.

Production of Solid Fuel Rocket propellants requires controlled environment. Oxidizers and binders in solid rocket propellents can be adversely affected if processed within uncontrolled moisture levels. Bry-Air MVB dehumidifier is being used by the Indian Space Centre, Thumba for critical environmental control in the feeder room for propellant manufacture.

## 'A Diagnostic Problem'

A basic operation of the pharmaceutical industry is the bringing together, under precise conditions of the constituents to form compounds. Unwanted moisture may cause formation of undesirable end products.

One such case is of diagnostic products used in medicine. Many of the diagnostic products contain radioactive materials that must be mixed or compounded in a humidity controlled environment. Blending in a carefully controlled dry atmosphere is absolutely essential for this product. Bry-Air dehumidifiers have recently been supplied to several Indian Pharmaceutical companies, where diagnostic products are being manufactured or compounded.



# When Moisture is Torture!!!

**Bry-Air** in the picture Again!!

*The manufacture, processing and storage of sensitized photographic products require that the temperature, humidity and quality of air be controlled to produce a quality product.*

## Manufacture

The manufacture of photographic film is a process highly sensitive to atmospheric conditions, requiring controlled temperature and dry air.

Light sensitive photographic film consists of a flexible support, called the base, coated with a gelatine emulsion containing salts of silver. The film is laminated from several different emulsions and must be dried between each application.

The emulsion held at exact temperature in a liquid state

is coated on to the film or paper base and passed into the chilling chamber, where it is gelled as quickly as possible at 10°C or lower. After chilling, the emulsion coated film or paper enters the drying section.

Since film is sensitive to temperature heat cannot be used for drying. Hence dehumidified air is needed which adsorbs moisture from the surrounding air which accelerates the safe drying of film.

## Processing and Printing of Photographic Materials

### Preparatory Operations

During receiving operations, exposed film is removed from protective packaging for presplicing and processing. Photographic emulsions become soft and can be mechanically damaged at high relative humidity. Presplicing combines many individual rolls of film into a long roll to be processed. The presplice work area should be maintained at 21° to 24°C and 40-45% rh.

### Processing

Processing of exposed film or paper involves a series of tempered chemical and wash operations. The processed film or paper proceeds from the final wash to the drier to control the moisture remaining in the product. Too little drying will cause the film to stick when wound, while too much drying will cause an undesirable curl. Drying can

be regulated by control of contact time, humidity and temperature.

### Printing/Finishing Operation

For small scale printing, close control of environment is not necessary. Computer controlled electronic printers transport original film and raw film or paper at high speed. The proper temperature and humidity are especially important because in some cases, two or three images from many separate films may be super-imposed in register onto one film. For best results the printing room should be maintained at 21° and 24°C and 40-45% rh to prevent curl, deformation and static.

Mounting of reversal film into slides is also a critical operation of the finishing department requiring a 21°-24°C temperature and 40-45% rh room.

## STORAGE

### Storage of Unprocessed Photographic Material

While virtually all photosensitive materials deteriorate with age, the rate is largely dependent on the storage conditions. Deterioration increases by both, high temperature and high relative humidity.

High humidity alone is usually more harmful than high temperature alone. High humidity can accelerate loss of sensitivity and contrast, increase shrinkage, produce mottle, cause softening of the emulsion and promote fungus growth.

Under extremely humid conditions, film or paper should be both exposed and processed as soon as possible after the package is opened. If exposed products can not be processed the same day as exposed, they should be kept in a dehumidified cabinet or storeroom. Colour films or papers should be stored at 50°F (10°C) or lower. Airconditioning with relative humidity control would provide the most desirable storage conditions for unprocessed products.

### Storage of Processed Film and Paper

Required storage conditions for developed film and paper on (1) the value of records (2) the length of storage time, (3) whether the films are on nitrate or safety base (4) whether the paper base is resin coated (5) the type of photographic image.

High humidity damages gelatin, encourages the growth of mold, increases dimensional changes, accelerates decomposition of nitrate support and accelerates deterioration of both black and white and colour images.

Medium-term storage of photographic film is suitable for preservation for 10 years. The most satisfactory storage relative humidity is between 30-40%, with room temperature between 20-25°C. An airconditioner with desiccant dehumidifier gives the desired conditions.

For Archival storage of records, film needs to be preserved in airconditioned environment. The recommended space relative humidity is between 15-30% at temperature below 21°C.

*Proper preservation of photographic materials is complicated, since each of these factors is controlled by different organizations. The composition of the film or paper is controlled by the manufacturer, the processing by the processing laboratory and the storage conditions by the customer. The importance of all three must be recognized for the final quality of the product.*



# delair<sup>®</sup>

## — ADSORPTION DRYERS — XD SERIES (ENERGYLESS)

### What is "energyless"?

For the regeneration of the desiccant; energy is necessary. For the heat regenerated dryers, this is electricity or steam. For the heatless driers a certain amount of dried compressed air is used, for which part of the compressor energy is necessary.

The energy consumption of the system—compressor—aftercooler—drier is not very economical. In the aftercooler the compression heat (energy) is removed.

On the other hand fresh energy has to be supplied for the regeneration process of the air drier.

The heat of compression which is normally wasted can be used for regeneration of the desiccant. Present energy is not wasted and no new energy is necessary, therefore

the drier becomes "energyless".

### Theory of Operation.

Air exiting the compressor is at high temperature and is not saturated and therefore can hold much more moisture. Tests show that the relative humidity of such air at 300°F seldom exceeds 10% and is normally between 2 to 5%. By using this hot, thirsty air to regenerate the desiccant bed, excellent regeneration is assured.

### The advantages of an "energyless" dryer.

The dryer is based on heat recovery using the hot compressed air before aftercooling, without purge air loss; thereby reducing the operational costs.

As the regeneration heater and auxiliary components like regeneration fan and others are no

longer necessary it means a considerable saving in energy consumption and reduced maintenance costs. With no pressurization and depressurization during changeover, consequently simpler drier operation and control.

By drying capacity and very low dewpoints are possible.

Price/performance ratio remains unequalled.

### Limitations of a energyless dryer.

A possible limitation could be that the temperature of the compressed air may be too low for regeneration. This could be due to long pipelines from the compressor where too much heat is wasted or hence the dryer needs to be located next to the compressor and is not suitable for point of use.

### How does the energyless dryer work?

The compressed air dryer type XD is a regenerable adsorption unit, provided with two adsorbers for continuous operation.

The difference from other systems of compressor and adsorption dryer is, that the aftercooler is used as an intercooler between the regeneration and drying-stage.

The hot compressed air which is relatively dry, flows first through one of the adsorber in which the heat is used for the regeneration of the desiccant, after this the compressed air is cooled in the aftercooler (intercooler) in which the condensation takes place. Afterwards the compressed air flows to the other adsorber for drying. The desiccant adsorbs the water vapour and dried air leaves the drying unit.

The regeneration takes place as a result of the physical property of desiccant to release the adsorbed moisture at high temperatures.

At low temperature the water is adsorbed by the desiccants again.

After completion of regeneration the desiccant is too hot for water

vapour adsorption in the next drying process and therefore must be cooled first.

This takes place during a cooling period in which the hot compressed air is led directly to the after cooler.

A part of the cooled air is guided in counter flow through the regenerated adsorber. This cooling air is added to the main stream and dried.

When one adsorber has been regenerated and cooled (i.e. is ready for compressed air drying) and the other adsorber has reached the maximum adsorption capacity, the towers are switched over.

The first adsorber will dry the compressed air while the other will be regenerated.

### Salient features of the delair energyless dryer

- ★ A patented product of Delair.
- ★ Comes with the option of incorporating dewpoint control with digital display of actual dewpoint and changeover control signal. This provides longer drying time by a postponed change over and extending the desiccant life.

### The XD Range

The XD series come in 7 models with capacities ranging from 546 m<sup>3</sup>/hr to 4500 m<sup>3</sup>/hr.

Pressure dewpoints achievable - 25°C.

Operating pressures 4 kg/cm<sup>2</sup> to 10 kg/cm<sup>2</sup>.

